

video conference with State officials and did not get any information about this. And one of the things we will look at is why in the middle of this emergent crisis there was a conflict in the information."

You know, I can tell Secretary Chertoff why the State and local officials did not feel like they had to tell you that there were people at the Convention Center, because you could not turn on your TV and not see them dehydrating in front of your very eyes. How about the woman who had her dehydrated baby who she could not even wake up? I mean, I have a 2-year-old. God forbid that ever happened in my family. I can assure you that if it happened in the community that I represent, I have a hunch that the response would have been a little bit quicker because my constituents are not poor and they are not African American primarily.

You know, you talk about the South, and obviously I am one of those Members that would be very protective of the South. But this could be a natural disaster in Detroit or in Wisconsin or name any State with a black community or a predominantly poor community, and there but for the grace of God go them. I mean, really.

We are not here to point fingers. We are just here to point at what has been happening in front of our very eyes. And this has just got to stop. We do have to come up with solutions. We cannot hand out \$50 billion to a person who is running the show like it is a circus, like he is the ring leader in a circus, and not a very good one. It is just inexcusable. We cannot ever let this happen again, and we have got to draw a line in the sand and say this far and no further.

Mr. RYAN of Ohio. It almost brings up the point, whether it is black or white or whatever, number of electoral votes the way this group operates. You know, if you have got a State that has enough electoral votes, we will maybe even be there before anything comes. But if you do not have enough, you know, you are on your own, and we are going to absolutely roll the dice.

And as we are kind of creeping into the final few minutes here, I want to just touch upon what the gentlewoman from Florida (Ms. WASSERMAN SCHULTZ) has just said, that I hope the ultimate point that we can all carry out of this whole tragedy that is still going on for thousands and thousands and thousands of people, and I hope when New Orleans is rebuilt and we are all down there, you know, hanging out again, that the point that we all remember is this: this tragedy highlighted the clear disparity between many people in this country and many others in this country. Whether it is black or white or rich or poor, there is a huge, tremendous rift between those people who have a lot of money and those people who do not have anything.

And we saw it today, or this past week because people were saying, well,

why did they not leave? Well, 35 percent of the African Americans, I believe, in the city, did not have cars. Now, regardless of how the whole thing was structured, and we will have arguments about everything else, they were at a clear disadvantage. They were reliant upon someone else. And you go through education and health care and basic skills that kids test on, it is unbelievable how poorer kids do so much worse.

And this is going on in Youngstown, in Akron, in Cleveland, in Milwaukee, in Detroit. Pick a city, as the gentlewoman said. And I hope that after all this we realize that that is unacceptable and to give millionaires trillions and trillions of dollars and see what the end result is, whether it is through kids, education, health care or levees being built, the government has a role to play, and those people who benefit from society have an obligation to meet their responsibility to everybody else. And that is really, I think, the ultimate point in this. And I hope that the reaction to this is the same reaction that we had in 1927 when the big flood hit in 1927, which eventually led to a very progressive era in government and into the 1930s and 1940s and, quite frankly, into the 1980s.

So I hope that we all realize that, you know, we are pretty lucky, most of us. But there are some people that we need to reach out to and find ways to reform government and put the money in the right places to make sure that those people have the kind of opportunity that many others have.

Mr. MEEK of Florida. I would say to the gentleman from Ohio (Mr. RYAN) and the gentlewoman from Florida (Ms. WASSERMAN SCHULTZ) I just wanted to go over a couple of these programs that FEMA has available for individuals that are in the Federal disaster area, those States that have been designated by the President. There are a number of grants and I just want to make sure, and also low-interest loans, and if anyone wants assistance as it relates to those, you can call and just ask the question. The operators will go over it with you. They are working 7 days a week, 24 hours a day. You can call 1-800-621-FEMA, F-E-M-A, and that is 3362. So that is 1-800-621-3362 to register. If you are hearing impaired, you will dial the TDY line, which is 1-800-462-7585. I am going to read that other number over again. 1-800-621-3362. If you are hearing impaired, 1-800-462-7585. They also have an online, you can reach FEMA through FEMA acronym, FEMA.gov/register. That is again 24-hour grant. They also have 24-hour you can get the grant information. And many of the family members may have to get it on behalf of the other family members because they may not be in an area where they can receive that information. You have to help your family and friends through this process, even though government is reaching out to them.

The individual housing grants that are also available, this is the primary

vehicle of assistance that FEMA provides to individuals. Also what that individual grant information does, it provides you with a voucher for short-term housing. Each individual can get up to \$26,200 per individual or household. And I think that is important. And we will give you more information in the coming days on that.

Disaster unemployment relief. This program, with acronym of DUA, provides benefits to individuals that were previously employed or self-employed that have been made jobless because of a direct result of the major disaster which will be Katrina, that are not eligible for regular Federal or State unemployment insurance. I think that is important. But I still urge Americans and also Members to encourage their constituents to go after these programs.

Dislocated worker activities, this is a program that provides training and also related assistance to persons that have lost their jobs that are unlikely to return back to their current job or industry. That is important for individuals that are throughout the country.

I just want to be able to add in the last couple of minutes here, we have folks that are all over the country, that are literally all over the country. And I am coming back to the gentleman from Ohio (Mr. RYAN).

In Alabama, there are some 5,017 individuals; Arkansas, 5,534. I am just reading out some of the big numbers. Louisiana there are a lot of people still there, 67,000 individuals. So there are a number of programs that are available. I urge you to go to the FEMA Web site or even call them. Mr. RYAN, do you want to give the Web site information?

Mr. RYAN of Ohio. 30somethingdems@mail.house.gov. We are going to be trying to recruit college kids to go down and help with the clean up too. So it is 30somethingdems@mail.house.gov

Mr. MEEK of Florida. Well, on behalf of the 30-something Working Group, we would like to thank the Democratic leader, Mr. Speaker, for allowing us to come here to the floor once again, and it was an honor addressing the House once again.

#### ENERGY EFFICIENCY

The SPEAKER pro tempore (Mr. KUHLMANN of New York). Under the Speaker's announced policy of January 4, 2005, the gentleman from Maryland (Mr. BARTLETT) is recognized for 60 minutes.

Mr. BARTLETT of Maryland. Mr. Speaker, this evening I wanted to spend the first few moments reflecting on the crisis in the gulf.

□ 2300

I have been privileged to observe nearly 8 decades of life and I will tell you that this is the only time that I can remember that I was looking at television, coming from our country that seemed really surreal to me. I had

to pinch myself to make sure that I was not dreaming, because how could it be that in our country, the United States of America, there were people sitting dead in wheelchairs by the sidewalk, there were people rolled up in sheets dead and others walking by them, there were corpses floating by in the water?

There were tens of thousands of people in buildings that they could not leave because water was around them and they had no food, no water, no bathroom facilities and no power.

The situation is better now and it is improving; and no one is happy with the response of either the local officials, the State officials or the Federal Government. But, Mr. Speaker, this is not the time to look at what went wrong.

Now is the time to make sure that these people are all rescued, who are not already out, to make sure that they all are comfortable in housing, to make sure that their needs are met, that their children are in school.

There will come a time that is not now, Mr. Speaker, when we will really take a hard look at what went wrong, not to place blame. Because I really believe, Mr. Speaker, that everyone at every level made what they thought was the right decision at the time they made it. Obviously, in hindsight, it was not the right decision and we need to make sure that we learn from this experience so that we do not repeat it when we have another crisis. And there will be another crisis, either a natural disaster or a terrorist-induced crisis.

Americans are really helping. When a tragedy occurred overseas we stepped out ourselves to help in the tsunami and Americans are doing that now for other Americans. And we are learning that sometimes bureaucracy gets in the way because we have people who want to help and they are ready to help and they wait and they wait. What can we do? And they are ready with supplies. We are working very hard, Mr. Speaker, as we clear away these roadblocks in our bureaucracy because we know that what the Bible says is true, that it is more blessed to give than to receive.

We are now taking a lot of money from our people and from our children and our grandchildren because we will not be able to pay it back, money we need to help the survivors of this catastrophe. But we must not deny our citizens the satisfaction, the reward, the fulfillment that they get from helping themselves. And so we must continue to work to make sure that bureaucracy does not get in the way of people helping people because that really, in the end, is the best kind of help.

Just a little example about how much some of our agencies have done. This is the Coast Guard. They rescued over 23,000 survivors, assisted in the evacuation of another 10,000 from area hospitals. They have brought in over 2,600 servicemen and women, called up another 800 Reservists to undertake re-

sponse operations. They moved over 75 aircraft, 22 cutters, those are ships, 110 small boats into the disaster area to execute search and rescue, environmental clean-up and to restore navigation to ports. That is very important because a lot of oil moves in there.

They dispersed tons of food, potable water and other supplies to survivors, surveyed and replaced dozens of aids to navigation required to reopen 62 percent of the local ports and waterways to deliver critically needed oil, gas and other natural resources.

They have begun the environmental remediation on gulf waterways by removing 60,000 gallons of oil, 665 floating containers of unknown liquid, 132 compressed cylinders and 10 petroleum tanks.

Mr. Speaker, as a result of this crisis, gas that was already high has skyrocketed higher, and now many people are talking about energy. We started talking about energy and a coming crisis on March 14. Katrina has just hastened and magnified the process that we began talking about then.

On March 4, just 10 days before we gave our first floor speech here on this subject, gas was \$1.93. By August 29, just before the hurricane hit, it was \$2.60. That is a pretty big increase, from March 4 to August 29 a 67 percent increase. In just 7 days from August 29 to September 5, the price of oil jumped from \$2.60, this is an average nationwide, more some places, less some others, to \$3.04 average. This is an increase of \$1.22 in just 1 year.

But, Mr. Speaker, it could have been much worse. We have over 4,000 wells in the gulf; 953 of those are manned rigs and platforms. Only about 20 of those were cut. And, by the way, from those 4,000 wells we get about 1.5 million barrels of oil a day, which is just a bit more than a fourth of all the oil that we pump. So we pump just a little over 6 million barrels of oil. But, Mr. Speaker, we use 21 million barrels of oil and the rest has to come from somewhere else and that somewhere else is all over the world, and much of it from countries that are relatively unstable, whereas, the President says, the people do not particularly like us.

I have here, Mr. Speaker, a little chart that shows the density of the oil rigs off the coast. And notice the little line here, the little symbols here. That shows where the hurricane came in. Lucky for us the hurricane came in where there was the least density of oil wells. Had it come in just a little west of that, it would have hit a very much higher density of oil wells, and the crisis might have been much worse than it is.

On September 7 there was an article by Reuters that said another storm would devastate U.S. energy, and it was quoting some analysts. And one of the analysts I know, because I have spoken with him several times and met him, was Matthew Simmons; by the way, he is the energy adviser for the President. He was an energy adviser in

his first campaign and in his second campaign. He is the president and CEO of the largest energy investment bank in the world.

This is what Matt Simmons said in talking about our refineries and the infrastructure that moves the refined product to a great many users on the east coast. He says, "We shoved it all into Texas and Louisiana. We put the heart of the industry in the middle of hurricane alley."

Mr. Speaker, we may want to rethink where we have this infrastructure in light of its vulnerability to this kind of natural disaster.

I have here a news story from the 4th of March of this year, that was just 10 days before we gave our first floor speech here on this subject; and I am quoting from this. "The average pump price then was \$1.93," as I just said.

Trilby Lundberg—this is the Lundberg family, everybody has heard of the Lundberg Report that for many years now has been giving the price of gas and predicting what it will be in the future—she said, "The chances of gasoline rises are very, very strong, if not immediately, then in coming weeks as we move into spring." It was \$1.93 then, remember.

A government official who works for the U.S. Energy Information Administration, and I will not give you his name, Mr. Speaker, because he would be quite embarrassed, because this is what he said. He said, "It takes about 8 weeks for crude prices to make it to the pumps," and he did not think the increase would be more than 10 cents. It was \$1.93 so he did not think it would go up in the summer to more than \$2.03. Mr. Speaker, it was \$2.60 before the price was pumped up by the hurricane.

I guess it just goes to show, Mr. Speaker, that you cannot believe everything your government tells you.

The AAA reporting in that same story made this statement, Mr. Robert Sinclair from the AAA said, "Probably the era of cheap oil as we have known it, where a barrel of crude oil was \$29 or \$30 is gone forever."

Sadly, Mr. Speaker, I think that Mr. Sinclair was exactly right, and the chart that I have here shows that.

Now I have had to modify this chart. This shows inflation steadily rising and it shows the price of oil which has been up and down. And we notice what I had to do over there at the end, because a few weeks ago when I used this chart, we had not gone over \$55 a barrel for oil and so I put that down as the 2005 figure. But just a few days ago during intraday trading, the price of oil went up to \$71.85, almost off the chart.

When I come back again, Mr. Speaker, and I will, to talk about this subject, because I think it is so important that we need to emphasize it over and over again so that we have enough interest and enough knowledge so that we do the things that we really must do to avoid a really big problem with this in the future. So I suspect, Mr.

Speaker, that when I come back to talk again that this might very well be off the chart, and we will try to add something to the corner of the chart to show you how high it has gone.

□ 2310

On the next chart are some numbers that are widely known. We have only 2 percent of the known reserves of oil. We use 25 percent of the world's oil. As I said just a few moments ago, about two-thirds of that is imported.

By the way, we have gone from bad to worse. In the Arab oil embargo in 1973 we imported 34 percent, about one-third of the oil we use. We did not learn a whole lot from that, did we, Mr. Speaker, because now we are importing two-thirds of the oil that we use. So we are even more vulnerable, and look what happened then with the Arab oil embargo.

We represent only 5 percent, as a matter of fact less than 5 percent, of the world's population, one person out of 22, and we use a fourth of all of the oil which is used in the world. The other figure here is a really interesting one, and that shows that we pump 8 percent of the world's oil. If we have only 2 percent of the reserves, and from that 2 percent of the reserves we are pumping 8 percent of the oil, that means we are pretty good at pumping oil, and we are. It also means that we have a whole lot of oil wells probably, and we do. More than half of all the oil wells drilled in the world, Mr. Speaker, are drilled in this country. So we do not have much oil, and we are using it up really quickly. When there is an end to oil, we will come there before the rest of the world because we use so much, we have so little, and we are pumping the so little we use so fast.

The next chart shows a consequence of this, and by the way, those numbers inspired about 30 of the leading citizens in our country, McFarland, Jim Woolsey, Frank Gaffney and about 30 names total, retired generals and admirals and leading people in our country wrote a letter to the President saying, Mr. President, the fact that we have only 2 percent of the oil and use 25 percent of the oil and import two-thirds of what we use is a national security risk, which is unacceptable. We have to do something to wean ourselves from foreign oil.

The chart that I have here, Mr. Speaker, points out one of the problems that we face, and that is, that we are not only a country that needs a lot of oil. China now is the second largest importer in the world. Last year, they increased their importation 25 percent. I saw the number. They increased their oil use by 14.7 percent. I am not sure how we get so precise, but this chart of the world here shows where they are. They are now scouring the world to make sure that they have oil, and they are entering into contracts and buying assets.

You may remember, Mr. Speaker, they bid on Unocal in our country, al-

most got it, bid more than Chevron. Fortunately, they withdrew their bid. By the way the price of oil is not set by who owns it. It is set by how much of it there is in the world compared to demand in the world. It would have not been nice for China to own oil right in our country, but it really would not have affected the price of oil at all.

Notice, they are in Colombia. They are in Venezuela. They are in Brazil. They are really in the Middle East. In the big far eastern Russian oil reserves in the Sakhalin Islands, they are now building a pipeline. Originally, we thought it would go to a port where the oil would then go to Japan. Russia has just recently said that at least a large part of that is going to be diverted on down to a pipeline that goes to China. So we now have a world in which China and India and all of the developing countries, many of them in northern Africa, particularly in the Orient, are now demanding more and more oil.

To put this in context, Mr. Speaker, and to kind of see how we got here, we need to go back 60 years. Our next chart takes us back there 60 years and just a word about the origin of this chart.

Working for the Shell Oil Company in the 1940s and 1950s was a scientist known as M. King Hubbert. He watched the pumping and the exhaustion of oil fields and he noticed that for almost all of those fields that they followed a bell curve. Now, most people are familiar with a bell curve. There are some people very short, some very tall, but most of us are somewhere in the middle. So there is a bell by weight, and most things out there in the nature, their distribution follows a bell curve. What he found was that we pumped oil faster and faster until finally we reached a peak, and at that peak, he noticed that about half of the oil that was in the field had been found, and no matter how hard they sucked and pumped, the production of oil from that field fell down the other side. It is perfectly reasonable that the last part of the oil is more difficult to get than the first part of the oil.

So what M. King Hubbert did was to say, gee, if I knew how many oil fields there were in the United States, and I knew how many more we were likely to find, and if I added up all these little bell curves, I could get a big bell curve which would tell me when the United States was going to peak in oil production. He did this study and he made that prediction in 1956. Everybody thought that he was going to be really wrong and really be embarrassed, and Shell Oil Company said, please, do not do that.

He published the paper anyhow, and right on target, in 1970, we reached our peak oil production. M. King Hubbert went from being something of an embarrassment to being an icon because he was right on the money. He predicted 14 years ahead when we would peak in oil production in this country.

Using those same analytical techniques, he predicted that the world

would peak in oil production about 2000. That did not happen because he could not have known of the Arab oil embargo and the oil price spike hikes and the worldwide recession that occurred as a result of these oil price spike hikes.

Many experts believe that we in the world are peaking about now. If not now, soon. The next chart shows where we have gotten our oil from in the United States, and it shows the production curve and the fact that right on target in 1970 we peaked in oil production, and it has been downhill since.

This shows where we get the oil from, a whole bunch from Texas, the rest of the United States, natural gas, liquids. Notice Alaska there. This is Prudhoe Bay, from which we get a fourth of our oil, and Mr. Speaker, that produced only a little blip in sliding down Hubbert's Peak, and notice the yellow there. I am sure you can remember the fabled Gulf of Mexico oil discoveries. This was going to solve the problem. There would be oil for a very long time. That is all the contribution. That yellow there is the total contribution from the Gulf of Mexico oil discoveries.

Mr. Speaker, I am having some trouble understanding why we ought to drill ANWR. Let me tell you why. We have only 2 percent of the known reserves of oil. We use 25 percent of the world's oil. I am having trouble understanding how it is in our national security interests to use up that little bit of oil we have as quickly as we can. If we could pump that oil tomorrow, and we cannot, but figuratively, if we could pump that oil tomorrow, what would we do the day after tomorrow? And there would be a day after tomorrow.

ANWR will be, most people believe, not more than half of what Prudhoe Bay was, and you see that it did little or nothing to stop our slide down Hubbert's Peak. So I would like to reserve ANWR. We are really going to need oil in the future. It and gas are the feedstock for an enormous petrochemical industry. We live in a plastic world, and in the future, when we look back at what we have done, we will be embarrassed that we burned, just to get energy, so much oil, and particularly gas, because they are such an important feedstock for our petrochemical industry that we see all around us.

We live really in a plastic world. It builds our tractors and makes the insecticides, makes the herbicides. It makes the plastics. It is anything and everything in our society.

□ 2320

The next chart shows something very interesting. In spite of increasing techniques, in spite of computers, in spite of 3D seismic, the peak oil discoveries were about 40 years ago. Now, this is blocked off by 5-year increments, and there was a big one here at about 1980, but generally speaking the discovery of oil has been down, down, down. And the experts do not believe that there is

more than about maybe 5 percent of the known reserves that are yet to be discovered.

We have drilled a lot of holes. We have done a lot of exploration. We are really good at finding oil. And most of the experts do not believe we should count on much more than maybe about 5 percent of our current reserves as unknown, yet-to-be-discovered reserves.

The next chart shows something very interesting, and that shows that you cannot drill your way out of this problem. This shows the production of oil in the United States; and in 1980, when the Reagan administration came in, we were already 10 years down Hubbert's Peak. We had slid over the top and were starting down the other side of this bell curve called Hubbert's Peak. We were importing oil, and Reagan was concerned that we needed more oil. And so he did what you do in a market society like we have, he gave incentives for drilling. If we just give them some incentives, some tax advantages, some profit motive for drilling, they will go out and drill.

This yellow line represents the number of wildcat wells that were drilled. And, boy, was he successful. He got them to drill a whole lot more wells. But notice what happens down here. They produced less and less oil. They soon tired of drilling those extra wells when they were not finding any oil; and so, notice that the number of wells they drilled slipped down and down because they were finding less and less oil and we were going more and more negative.

The next chart shows something which Albert Einstein said was the most powerful force in the universe. When we had discovered atomic energy and the nuclear weapons, Albert Einstein was asked, Gee, Dr. Einstein, what will we do next? What will be the next big increment in energy? What will we fight the next war with and so forth? He said, The most powerful force in the universe was the force of compound interest; that is exponential growth.

And so here we show some exponential growth curves. The bottom straight line here is a 2 percent growth in the first year, and then just extrapolating out there from that. If you have money in the bank and it is getting 2 percent interest, and every year you take out the 2 percent and just keep it and do not let it in there to create any more interest, that is the rate at which it will grow. But if you leave the interest in and it is compounded, then you see what happens. You have what is called an exponential curve. This is 2 percent and 4 percent and 5 percent.

And this one on the left here is a really interesting one, Mr. Speaker. That one that goes almost straight up, that is the rate at which China is growing, almost 10 percent a year. With a 10 percent growth rate, you double in 7 years, 7.2 years to be precise, but roughly 7 years. You are four times bigger in 14 years and you are eight

times bigger in 21 years. Now, I do not think China will necessarily continue with a 10 percent growth rate for 25 years, but if they do, their economy will be eight times bigger than it is today.

The next chart shows this same 2 percent growth. And, by the way, you can make that bell curve very sharp, very high and very sharp. You can simply change the numbers on the abscissa and the ordinate here. But this is the same 2 percent we saw in the previous one, and this has been about the rate that the consumption of oil has grown in the world, about 2 percent a year. That is the 2 percent curve here.

Now, obviously, up until this time the rate of reduction has equaled the rate of use because we have used all the oil that was produced and we have had all the oil we needed to use. But there will come a time, if in fact there is a phenomenon known as peak oil, when you peak, and there was for our country.

I want to remind you, Mr. Speaker, that there are a couple of unassailable facts. The first one is that M. King Hubbert was right about the United States. We did peak in 1970. He predicted that we would peak in 2000. Now, why should not M. King Hubbert be right about the world if he was right about the United States? And we now have oil at, what, roughly \$65 a barrel, that has recently spiked up to over \$71 a barrel.

But notice, Mr. Speaker, from this chart that the problem does not wait until peak. And, by the way, this 2 percent growth curve doubles in 35 years. So from this point to the end here, all the shaded area, that spans 35 years, because the upper point here is twice this one. That would mean that you start to have problems, if you could see them that precisely, 17½ years before peak. So we do not necessarily have to reach the peak before there is a discrepancy between what you would like to use, India and China and us.

We think, Mr. Speaker, if our economy is not growing at least 2 percent a year, the sky is going to fall, so we need to grow. China is certainly growing. India is growing. All of the Orient is growing and all demanding more oil. And if we stay with only a 2 percent increase—China last year increased 14.7 percent, India increased. If we stay with only a 2 percent increase, we are going to be really lucky. And, Mr. Speaker, we will not even be able to use all of the energy that is available here if, in fact, we are going to make a reasonably smooth transition to alternatives.

Mr. Speaker, we will transition to alternatives, because the age of oil will not last forever. And as oil runs down, we must move to alternatives. We will either move to alternatives because there is not any more oil available in the quantity we would like, and by the way we are not running out of oil; there will be oil for another 100 years. What we are running out of is readily

available, high-quality oil produced in the quantities that we need to meet our current economic demands.

Now, we really are going to have to reduce our consumption here so that we will have some energy to invest in the alternatives, because you are not going to make the transition without investing three things: Money. Mr. Speaker, we do not worry much about money. We just borrow it, without permission, from our kids and grandkids. But we cannot borrow time and we cannot borrow energy. So we are going to need to have time and need to have energy. So what we are going to need to do is to conserve, so that we reduce our energy demands so that we have something to invest.

The next chart shows us, Mr. Speaker, that we really can do that. This shows through the years from 1960 to 2000 the energy use per capita, per person, in the United States. Now, on this chart, Mr. Speaker, we see something very interesting. We, and by "we," me and everybody else in the United States and California, started out at the same place, about 4,000 kilowatt hours per person. We have been using more and more energy as we have lived better and better from 1960 until now. We have more labor-saving things that are using fossil fuels to help us. But notice what has happened. Because of their emphasis on environment and efficiency in California, the average Californian uses only about 65 percent as much energy as the rest of America. This shows, Mr. Speaker, that we can conserve. We can be more efficient. We can reduce our consumption of energy.

The next chart shows what we have available to us to transition from fossil fuels, oil, gas, and coal to renewables. We have some finite resources. These are things which we have that are not the typical petroleum product that we can rely on to give us some energy. Tar sands and oil shales and coal and nuclear fission and nuclear fusion. Just a word about these.

I would first like to make an observation about energy density, because this is a quality of energy that is very important in our society. Fossil fuels have enormous energy density. For instance, Mr. Speaker, one barrel of oil, the refined product of which is 42 gallons of gasoline, you can buy at the pump for just a little over \$100 now. That will give you, Mr. Speaker, the work output of 12 people working all year for you and it costs you just a little over \$100.

Now, to give you some sense that that is probably correct, I would like you to reflect for a moment, Mr. Speaker, on the car you drive and how many miles per gallon you get. That gallon of gas is still, at \$3-something, cheaper than small bottles of water in the grocery store, by the way. But reflect on how far that gallon of gas will take you in your car and then you think about how long it would take you to pull your car that far.

□ 2330

So you will get some notion that this energy density is probably correct, that a barrel of oil, 42 gallons of gas, the refined product will give you the work output of 12 people working all year for you, and it costs you just a little over \$100.

Mr. Speaker, another way of looking at this is to go out this weekend and work very hard in your yard, manual labor, digging a ditch, cutting grass, whatever you want to do. I will use an electric motor and less than 25 cents worth of electricity, and I will get more mechanical work done than you will working all day long real hard. That is kind of humbling, is it not, Mr. Speaker, to recognize that in terms of the energy in fossil fuel, you and I are worth less than 25 cents a day.

But this is really the problem we have had, because these fossil fuels are so good, they are so available, the energy density is so high that we have just come really to rely on them. So when we are looking for alternatives, if we are going to continue the lifestyle anything like the lifestyle we have now, we are going to have to find substitutes that have something like the quality of energy this our fossil fuels. That is not going to be easy, Mr. Speaker.

Here are the finite resources that we have. There are some big oil sands, they call them oil sands up in Canada, and they are now producing oil from the oil sands at about \$30 a barrel. Oil is selling at \$65 a barrel, and that is a good deal, so Canadians are producing a lot of oil up there from the oil sands. From a dollars and cents perspective, that makes a lot of sense. They are doing that and selling it.

But there is another profit ratio that we have to think here, and that is energy profit ratio. That is energy in and energy out. I am told that at this time they are using more energy from natural gas.

You see, this tar and the tar sands is so stiff that it will not flow at normal temperatures. So they drill two wells together, then they go horizontal, and in the upper well they put hot water, steam, and that softens the oil. Then it goes down through the rock and sand and then they pick it up in the lower well that is drilled under that. They can now drill down perpendicularly and go horizontally, as they have been able to do for a number of years.

I am told they are using more energy from natural gas than they will get out of the oil they produce. For them that is still maybe a good idea, because the natural gas is up there and it is cheap for them and hard to transport. Because it is a gas and there is not very much of it, the density is very low. They are converting gas energy into oil energy, and although they get less energy out of the oil, you can put it in a pipe or ship and you can easily move it and you are getting \$65 a barrel for the oil, so they are doing it.

But this points out, Mr. Speaker, that we should not be too sanguine

about all of the potential energy in the tar sands and oil shales, because it may take, even if we get really good, and they are now talking about putting a nuclear power plant up there to heat the water, to soften the oil to get it out of the ground, if we are really good at getting this out, it is not going to be very energy positive. We are going to have to be good to make it energy positive at all.

Then coal, in a couple of moments I will show you a chart on coal, we have 250 years at current use rates, but that shrinks when you have to use it in higher quantities, and we will have to use it in higher quantities.

Nuclear fission, that is the conventional nuclear power plants, now we get 14 percent of our total energy, 20 percent of our electricity, from nuclear. As you drive home tonight, Mr. Speaker, note that every fifth house and every fifth building would be dark if we did not have nuclear energy.

We probably in this transition period need to have a lot more of that, and we need to think through what we do with the waste from that and how we handle that. But either you are going to end up using far less energy than you are using now, or you are going to get energy from sources you are not now getting it from, and nuclear is a very attractive source to get energy from because you have such enormous energy output from a single plant.

But that is not a final solution with the kind of power plants we have now, because they use fissionable uranium, and that is in limited supply in the world and that will not last forever. Maybe, I get different numbers, I get numbers between 30 years and 200 years, depending on who you are talking to. We desperately need an honest broker, like maybe the National Academy of Sciences, to help us agree on a number so we have something to work with.

But in any event, when fissionable uranium is gone, and that is at current use rates, by the way, we have 30 to 200 years. If you ramp up the use rates, it goes more quickly. Then we have to go to breeder reactors, with which we have little experience and which produce by-products that have to be stored away, even more critical by-products, end products, than from the fissionable uranium, that have to be stored away for maybe a quarter of a million years, and that kind of boggles the mind to think of storing something away for that long.

The last one here is nuclear fusion. I support all the money that technology can absorb. I think the chances of getting to nuclear fusion in our lifetime are about the same as my chances of winning the lottery and solving my personal economic problems. If I think the lottery is a good bet, I am going to think that nuclear fusion is a good bet. But I would not bet the ranch that we are going to get to nuclear fusion.

If we get there, Mr. Speaker, we are home free, because there is essentially

a inexhaustible amount of energy there. We ought to support all of those skilled people that have expertise in this area to see if it is possible to get there. But it is certainly something we should not bank on. It will be really nice if it happens, but we better have an alternative course of action, because it is unlikely to happen.

Once we have gone through these finite resources, then we come to the alternatives. I would like to look at the next chart and leave this one up, because I want to come back to it.

This now shows where we are. This is our total energy use in the little circle here, and three-fourths of that, the natural gas, the petroleum and the coal, if you add those up, they add up to 85, it should be 85 percent.

The other sources of energy are then 15 percent total. A bit more than half of that comes from nuclear power and so-called renewables. Here the chart has blown that up so we can see it. The biggest part of that comes from hydroelectric, and that is not likely to grow in our country, because we have dammed up about every river we should and maybe a few we should not and we are breaching more dams than we are creating now. So that is probably not going to grow.

The next biggest source of renewables is wood. This is not the rural person burning it for heating their home. This is a big timber industry and paper industry wisely burning what would otherwise be a waste product to get energy.

Then waste. This one can grow, the waste, and it should grow. It is really kind of dumb to bury our waste rather than burning it to get energy from it. Landfills create problems. When you burn it many of those problems, when you control it the pollutants disappear and you get energy from it.

But what this points out is that the sources that we are going to have increasingly turn to as we run down Hubbard's peak are things like solar, which is now one percent of 7, which is one out of 7 percent, which is .07 percent. Wind, these are just now really minuscule, but they are the resources that we have got to invest in, because they are going to have to be big sources of energy for us in the future.

Here, alcohol. A couple of weeks ago I spent a full day, Mr. Speaker, at the National Press Club here on a conference on ethanol. There is a big controversy out there about whether or not we can produce ethanol and get more energy out of the ethanol than we put into producing it, mowing the land, building the tractor, putting the tires on the tractor, fertilizing and so forth. There are a couple of really good scientists who believe they have looked at all of the energy inputs and they think that you have an energy deficit when you go from corn to ethanol, that you put more energy into producing it than you get out of it. Others think it is maybe energy positive.

But the point I am making is if it is energy positive, it is not going to be

very energy positive, and it may be a nice convenient way to end up. You cannot put cornstalks in your car and go, but you could have a little critter that breaks down the cellulose there into glucose and then ferment that and get alcohol and put that in your car and go. I am not saying it is not a good idea, but I am saying we are not going to get enormous amounts of energy from it.

□ 2340

It may be energy positive; but if energy positive, not very energy positive.

Here is geothermal, and, by the way, that is not the geothermal of the guy who is selling the heat pump and telling us he is going to put in a heat thermal system. And what he is doing is very wisely connecting us either to groundwater or the ground so that we are not trying to heat the summer air to cool our house or cool the winter air to warm our house. It is what we do with the heat pump that interfaces with air, and they call that geothermal. And I agree they ought to put that in quotes because the real geothermal is where we are doing what Iceland does and tap into the molten core of our Earth where we are close enough where we can drill down and get the benefit of that heat.

If one goes to Iceland, I have never seen a chimney there. I have been there several times. They do not need chimneys because they have a lot of geothermal there. This points out the importance of these now very miniscule contributions to our energy. We are very much, Mr. Speaker, like a young couple that has just gotten married and we have really lucked out. We have got a big inheritance from our grandparents. We really lucked out. We found a lot of fossil fuels.

So now we have established a lifestyle where 85 percent of all the money we spend is our grandparents' inheritance and only 15 percent of it comes from our income. But our grandparents' inheritance is not going to last until we retire and certainly not until we die. So we are going to do, Mr. Speaker, one of two things. Either we are going to have to spend less money, or we are going to make more money; and that is exactly where we are in energy. Eighty-five percent of what we use is fossil fuels. Fifteen percent of it is what we have earned in a sense because it comes from nuclear power, and if we go to breeder reactors, that could be a perpetual source of power, and it comes from these renewables.

And we are going to have to transition as we run down Hubbert's Peak. We are going to have to transition from this 85 percent inheritance of our grandparents to the 15 percent, and would it not be nice if we could make it more than 15 percent? But the probability is that we are going to have to have life-styles in the future which require less energy.

And let us go back to our previous chart. If we look at the potential for

energy sources from all of these solar and wind and geothermal and ocean energy, can one imagine, Mr. Speaker, how much energy it takes to lift the ocean 2 feet, the tides? But the problem with that is it is so diffuse, it is very hard to harness. But people are trying. Wave energy, thermal gradients in the ocean, there are lots of possibilities of energy from the ocean; but it is very diffuse. It is very difficult to get it concentrated so we can use it.

Then all the agricultural sources. Mr. Speaker, I am not so sanguine about energy from agricultural as I once was as I recognize that we are barely able to feed the world. Tonight, a fifth of the world will go to bed hungry. When I recognize that we are barely able to maintain the productivity of our soils with no till farming that helps us keep our top soils.

Before that we were losing the battle, and our top soils in the center of our country were ending up in the Mississippi Delta, from the Chesapeake Bay Watershed. They were ending up in the Chesapeake Bay. Now we are doing better; but I am concerned, Mr. Speaker, how much biomass we can take from our agricultural land and still have enough organic material, good tilth, which is what we call that quality of soil. So we can get some energy from agriculture, but it is going to be limited. It is not going to be enormous amounts of energy we get there. But we need to get energy from every place we can get it because we have an enormous challenge to come up with enough energy to replace the fossil fuels as we run down Hubbert's Peak.

Waste energy, we mentioned that. It was on the previous chart. We really need to do more of that. That is a really good idea.

Just a word about hydrogen from renewables. Hydrogen, Mr. Speaker, is not an energy source. It will always take more energy to produce hydrogen than we get out of hydrogen. Otherwise, we are going to have to suspend the laws of thermodynamics, and they are not going to be suspended. But still it is a good idea to use hydrogen because we can get hydrogen from some things like coal, like electricity from a nuclear power plant; and we cannot put a nuclear reactor in the trunk of our car. We cannot put coal in the trunk of our car. We did that in the coal car behind the engine, but we do not do it in our cars and we will not.

So what we are doing really is converting one kind of undesirable energy to a very desirable form of energy in hydrogen that burns and we get only water from it. And in addition to that, Mr. Speaker, we can now use it in a fuel cell. It is very adaptable to a fuel cell where we will get about twice the efficiency that we do from a reciprocating engine. But please think of hydrogen as the equivalent of a battery. It takes energy from one place and stores it in a very convenient form so we can use it someplace else.

Several weeks ago we had a hearing here, and we had experts here on hy-

drogen and the hydrogen economy. And they all agreed that of the three ways that we could store hydrogen, only one of them was really feasible if we were ever going to move to a true hydrogen economy. Three ways of storing hydrogen. One is to compress it. It is the lightest element in the universe. It is always trying to get out of wherever we put it. And it takes big, thick pressure vessels because it is so light to store very much of it. So that is a big problem. They say that we can never really have a really functional hydrogen economy if we have to compress it.

Another way of storing is to liquefy it. Then it is really cold, and it takes a lot of energy to compress it and cool it, compress it and cool it until it finally becomes a liquid, and then we have to store it in a really insulated vessel; and when we park our car, it is just going off.

And they say that the third way of storing it is the only way that is really going to make a hydrogen economy feasible, and that is solid state storage. Storing the hydrogen in a reversible chemical reaction. Mr. Speaker, that is exactly what we do with the electron battery, which is the conventional battery we have. We take electrons and we put them in a chemical form that is reversible so we can charge the battery and then discharge the battery to get power from it.

So when we have a hydrogen economy, which will really be effective and doable, these experts say we are going to have to find a battery, a way of storing hydrogen in a solid form to make it really doable. So just think of it as another kind of battery.

The next chart is really a very interesting one, and it points out to us something that we should have realized, and this covers about 400 years. It goes from 1630 to the present. And on the ordinant it shows the energy that our societies have produced; and over here, of course, is time. And the brown here is wood, and it shows that when we really learned how to use wood in the Stanley Steamer and our charcoal for smelting iron and so forth, we started an industrial revolution. It was stuttering, and then we found coal, and, boy, it really jumped. But then the use of coal really dropped off when we found oil because oil had qualities that exceeded coal. It was so much easier to use. The energy density was higher. And look what happened to our production of energy.

And, by the way, the increase in population pretty much followed the increase in the production of energy. It made it possible now to live so much easier. We could have more children. We could support the children. And notice up at the top up there that little dip. That is the Arab oil embargo and the worldwide recession. And what that did, Mr. Speaker, was to delay the onset of peak oil.

The next chart shows us some characteristics of the alternatives that we are going to have to replace these fossil



fuels. On the ordinant here, we have energy profit ratio. I talked a little bit ago about energy profit. This is how much energy we get out from what energy we put in. And if we go subzero, we may as well not do it if we are putting in more energy in than we get out unless what we are getting out has some qualities that are better than the qualities we are putting in.

And we are down here now with hydrogen. Hydrogen is down here. It is below zero. We are putting more energy in than we are getting out. But never mind, because hydrogen has real economic effectiveness in transport. We can put it in a vessel, and we can run our car with it.

□ 2350

Now, what you want, of course, is an alternative that has the highest energy profit ratio and has the highest economic effectiveness in transport, and what meets that are the giant oil fields. We do not have any of those in our country. Most of U.S. oil is way down here. It is really good in terms of economic effectiveness, but it takes a whole lot more energy to get it out than it takes over in Saudi Arabia, and the big, giant oil fields are up here, and there never were any of those in our country, they are in the Middle East. You can see here coal. You get a meaningful amount of energy out of coal but, boy, it is not very good in economic effectiveness. You have to convert it into something else. Photovoltaics in 1995, they were way down here, and now we have moved them up to here. Hydro and coal-fired and nuclear are down here, and this tells you the qualities of the replacements that we are going to need to find for fossil fuels if we are going to be able to maintain anything like the economic activity and the lifestyle that we now have.

The next chart is an interesting one. It shows us coal, and people will tell us, do not worry about energy, we have 250 years of coal left in our country. That is not forever, by the way, but that is a very long time. That is true. At current use rates, we have 250 years of coal. But, if we are going to use more coal, we are going to have an increased use of coal, and if we use coal only with a 2 percent growth per year, and, Mr. Speaker, we are going to have to use a much greater growth rate than that to make up for the slide down Hubbard's Peak in oil, but only 2 percent growth per year, compounded, it now shrinks to 85 years. And, since you cannot use coal for a lot of things like running your car, you have to convert to a gas or liquid; well, you have now made that conversion, you are now down to only about 50 years. The coal is there, it is dirty, it produces a lot of pollutants. You either put up with the pollutants or you pay a lot of energy and money, and we will not worry about money, we should worry about energy, to clean up the coal.

The next chart is an interesting one. The top shows you the subject that I

spent a full day down here at the National Press Club a couple of weeks ago on, and that is ethanol. On the right here it shows the energy you get from oil. You put in 1 million BTUs and you get out 1.23 million BTUs. I am sorry. With an input of 1.3 million, you get out 1 million BTUs. Obviously, you are going to have to use some of the energy and the oil to transport it and to refine it and to deliver it and so forth.

Now, the chart on the left here was given to me by our Department of Energy. I am told by the experts that this is wildly optimistic, but this is at least this group's view of what we can get out of it. The Energy Conference had these two experts who said that you need to put in more energy than you will get out. And even this optimistic assessment says that to get a million BTUs out, you need to put in three-fourths that amount. Now, of course, the extra energy comes from the sun, which, by the way, is where the oil came from too, because the oil and gas all come from things that grew a very long time ago with sun.

On the bottom here is a really interesting chart. In this little pie-shaped thing here, it shows all of the energy that goes into producing a bushel of corn. And notice that nearly half the energy, Mr. Speaker, that goes into producing a bushel of corn comes from nitrogen. And that nitrogen fertilizer is made from natural gas, so that is natural gas energy there. And notice almost every other slice of this pie, we are talking about fossil fuel energy to grow the seed to haul, to supply the water, many of the chemicals come from oil, custom work, putting oil in the combine, natural gas that is liquefied or used as natural gas for drying your crop, electricity that is used for a lot of things; gasoline itself, diesel, the lime and the phosphate and the pot ash are all mined using fossil fuels, so essentially, for every piece of this pie, fossil fuels are used.

Now, what do we need to do? This next chart, which is our last chart, shows us the challenge. And, Mr. Speaker, what we need is a focus that is equivalent, if you are old enough to remember the Manhattan Project, it is equivalent to the Manhattan Project, or putting a man on the moon. That was a real challenge. And I think we need to challenge the American people in a very similar way. We have to do something about our dependence on foreign oil. If you do not think there is going to be such a thing as peak oil, and I think we are probably here. I hope not. I hope I am wrong, I hope these world experts are wrong. But if we are right, then we face a very bumpy ride. But even if you do not believe that as a problem, you have to believe that getting two-thirds of our oil from overseas is a big national security risk. By the way, we need to do exactly the same thing to reduce the national security risk that we need to do to transition. We need to buy time, conservation, and efficiency. We need to

use that very wisely. If you do the wrong thing, you may end up making the problem even worse.

I would encourage my colleagues, Mr. Speaker, to look into Jevons Paradox. Very interesting paradox. For some problems, the harder you work, the worse the problem gets. There will be real benefits to doing this. We will have technologies we can sell to the world, not just we, but the world, so we need to make this transition. We will create a lot of new jobs. It will be challenging to our people.

Whether we like it or not, Mr. Speaker, we are going to be a role model. We use 25 percent of the world's oil. We are a role model. We are going to be a role model. We need to step up to that.

Mr. Speaker, I would like to challenge our government and our people to step up to this challenge. There are those who believe that we cannot do this. One writer begins his article by saying, dear reader, civilization as we know it will end soon. His name is Mat Savinar, you will find him with a google search of "peak oil." Please read the article. You will be genuinely frightened, having finished the article.

I am not as pessimistic as Mat Savinar. I think that the American people, because we have met every other challenge, I think we can meet this challenge. But, Mr. Speaker, we are not likely to meet the challenge if we do not know there is a problem. So I am very appreciative for this opportunity to speak about this problem, and we will be back again, because this problem is not going to go away, and we need to talk more and more about the solutions and the problem.

#### LEAVE OF ABSENCE

By unanimous consent, leave of absence was granted to:

Mr. BUTTERFIELD (at the request of Ms. PELOSI) for today and September 8 on account of a death in the family.

Mr. FORD (at the request of Ms. PELOSI) for today on account of attending a funeral.

Mr. MCNULTY (at the request of Ms. PELOSI) for today on account of personal reasons.

Mrs. EMERSON (at the request of Mr. DELAY) for September 6 and today on account of helping with Hurricane Katrina relief.

#### SPECIAL ORDERS GRANTED

By unanimous consent, permission to address the House, following the legislative program and any special orders heretofore entered, was granted to:

(The following Members (at the request of Ms. WOOLSEY) to revise and extend their remarks and include extraneous material:)

Mr. DEFAZIO, for 5 minutes, today.

Ms. DELAUNO, for 5 minutes, today.

Mr. EMANUEL, for 5 minutes, today.

Mr. CUMMINGS, for 5 minutes, today.

Mr. BROWN of Ohio, for 5 minutes, today.